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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SMITH, JULIE KNECHT

ART UNIT

PAPER NUMBER

3682

DATE MAILED: 01/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/016,401

Applicant(s)

BELL, DALE K.

Examiner

Julie K Smith

Art Unit

3682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 and 19-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 and 19-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4-6, 8-12, 14-17 and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kapaan et al. (5,667,313) in view of Johnston et al. (5,129,495) and further in view of Otto (3,790,238).

Regarding claims 1-4, 6 and 8-12 and 25, Kapaan et al. discloses a drive train assembly (see fig. 1) comprising a housing (14) having an aperture through a portion of said housing, a bearing cage (7) disposed in said aperture in engagement with said housing, said cage secured to said portion, said cage including an opening therethrough, a driven shaft (18) including a shaft portion disposed in said opening and a bearing assembly (2) supporting the shaft portion in said cage, said bearing assembly including an outer race (3) spaced from said housing. Reiter is silent as to protrusions on said outer race. However, Johnston et al. teaches a bearing assembly including an outer race (see fig. 3) with a plurality of protrusions radially extending therefrom received in a cage preventing rotation of said outer race relative to said cage.

Therefore, it would have been obvious to one of ordinary skill in the art to modify the bearing assembly of Reiter with the teachings of Johnston et al. to provide protrusions on the

.Art Unit: 3682

outside of a race, so as to provide securing means between the race and a cage to prevent rotation between the race and cage, thus reducing friction within the bearing assembly.

Further, Kapaan et al. does not disclose spaced apart inner races engaging the shaft portion. However, Otto teaches a bearing assembly wherein the inner races engages the shaft.

Therefore, it would have been obvious to one of ordinary skill in the art to modify the bearing assembly of Kapaan et al. with the teachings of Otto to have an inner race engaging the shaft so as to reduce the number of parts included in the assembly, thus reducing cost, and further reducing the size of the bearing assembly, allowing it to be used in more compact applications. bearing assembly including spaced apart inner races (42,44) each supporting a set of rolling bearing elements (46) and a common outer race (40) supporting both sets of rolling bearing elements. It would have further been obvious to provide spaced apart inner races and a common outer race in order to reduce complexity and number of parts, while providing ease of manufacturing and assembly.

Regarding claims 5 and 6, Kapaan et al. does not disclose the cage (7) being made of nylon, however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make the cage out of nylon as it would have been a matter of engineering design to choose nylon so as to reduce the weight of the cage, and to reduce friction within the bearing assembly. *In re Leshin*, 125 USPQ 416

Regarding claims, 14-17, Kapaan et al. discloses the driven shaft being an input shaft, output shaft, through shaft and axle shaft.

Regarding claims 21-24, Kapaan et al. discloses a flange (17,19) extending radially outwardly from said bearing cage (7) with a fastener (20) securing said flange to said portion.

Art Unit: 3682

Kapaan et al. further discloses the bearing assembly including a plurality of rolling elements arranged between said outer race and an inner race, said cage arranged radially outward of said races, and a retainer locating said rolling elements circumferentially relative to one another.

3. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kapaan et al. in view of Johnston et al. and Otto as applied to claims 1-4-6, 8-12, 14-17 and 21-25 above, and further in view of Takemura et al. (2001/0017174).

Regarding claim 7, the reference combination set forth above discloses a bearing assembly having a cage, but does not disclose a cage constructed from a metal matrix. However, Takemura et al. teaches bearing parts being made of aluminum and silicon carbide. Although Takemura does not teach a cage being made of a metal matrix of aluminum and silicon carbide, he does teach other bearing parts being constructed with said metal matrix.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the cage of the reference combination set forth above with the teachings of Takemura et al. to construct a bearing cage out of aluminum and silicon carbide so that the cage can withstand the high temperatures and high vibrations produced by a drivetrain assembly.

4. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kapaan et al. in view of Johnston et al. and Otto as applied to claims 1-4-6, 8-12, 14-17 and 21-25 above, and further in view of Nippon (JP 11247848).

Art Unit: 3682

Regarding claim 13, the reference combination set forth above does not disclose the driven shaft being a pinion shaft. However, Nippon (JP 11247848) teaches a driven shaft being a pinion shaft (see fig. 1).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the assembly of the reference combination set forth above with the teachings of Nippon as it is old and well known in the art to use bearing assemblies on pinion shafts.

Response to Arguments

5. Applicant's arguments with respect to claims 1-17 and 29-24 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

Art Unit: 3682

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julie K Smith whose telephone number is 703-305-3948. The examiner can normally be reached on Monday-Friday, 8-5:30, (Every other Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A Bucci can be reached on 703-308-3668. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9326.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

UJ
Jks

January 26, 2004


DAVID A. BUCCI
COMMERCIAL PATENT EXAMINER
TECHNOLOGY CENTER 3600